

**AD HOC ADVISORY COMMITTEE MEETING SUMMARY**  
**Triennial Review WQS**  
**(Reassessment of six issues separated out from Triennial Review)**  
**June 17, 2009**

**Welcome and Introductions**

**Advisory Committee Members and Alternates Present:**

**Chesapeake Bay Foundation (CBF):** Mike Gerel

**Department of Defense (DOD):** Dave Cotnoir

**Dominion Power:** Oula Shehab

**U.S. Fish and Wildlife Service (USFWS):** Cindy Kane

**VA Association of Municipal Wastewater Agencies (VAMWA):** Jim Pletl, Jamie Mitchell,  
Dick Sedgely

**VA Department of Health (VDH):** Ram Tripathi, Dwight Flammia

**VA Coal Association:** John Heard

**VA Manufacturers Association:** Tom Botkins

**VA Department of Game & Inland Fisheries (DGIF):** Amy Ewing, and ??

**DEQ Staff Present:**

Alan Pollock (Facilitator), Fred Cunningham, Allan Brockenbrough, Alex Barron, David Whitehurst

Pollock made introductions and gave a brief review of the previous meetings

**Presentation**

**Ammonia-DEQ Recommendation:** DEQ expects that changes to the Virginia criteria for ammonia will be warranted after EPA provides their reassessment of the EPA ammonia criteria document. EPA is scheduled to issue a draft reassessment of their ammonia criteria in the fall of 2009. Recommendation is to not initiate a rulemaking at this time.

**Discussion:**

**DGIF** Why wait for EPA?

**DEQ** We are waiting to see exactly how EPA incorporates freshwater mussel toxicity data into the ammonia criteria calculation. DEQ staff believes it would be prudent to wait for action at the federal level to see how EPA recommends how to best address some of these issues. If EPA makes a decision at the national level in the fall a VA rulemaking would soon follow. .

**USFWS** Can DEQ staff advise the Board of what is coming regarding the potential for more stringent ammonia criteria? It is their understanding there already are some discharge permits written that account for the lower number.

**DEQ** The Board will be briefed in regard to this and the other five issues. We are not aware of any permits utilizing the new lower criteria

**USFWS** Permittees without the lower criteria number incorporated in their permit may be getting set up for possible litigation due to the taking of endangered species.

**DGIF** To what extent would the new criteria be applied in VA waters?

**DEQ** Application would most likely be statewide. Inclusion of freshwater mussel data in the data set and recalculation of the ammonia criteria would be treated like any other criteria development. This is speculation upon our part but mussel data may represent the most sensitive species data in the data set. [NOTE: did we not respond to the USFWS question at the meeting?]

**DOD** Stated they are still interested to see a map illustrating mussel species distribution.

**USFWS** Species distribution is essentially statewide.

**DGIF** Stated that they have species distribution information but it is biased due to surveys being oriented towards threatened and endangered species.

**DEQ** Staff is interested in seeing how EPA incorporates mussel data into the ammonia toxicity data set. There is a possibility the criteria could go even lower if threatened and endangered species are particularly sensitive.

**DGIF** Stated staff would do what they can to provide maps with species distribution.

**VAMWA** They believe it's a good idea to wait due to the way some of the toxicity tests were conducted. Is there the possibility of a seasonal criteria based on life stages? It would be undesirable to produce a standard more stringent than necessary i.e. similar to what occurred with TBT several years ago.

**USFWS** A seasonal aspect to the standard would be impractical due to the many different times of the year early life stages from different species are present.

### **Presentation**

**Copper- DEQ Recommendation:** Before recommending changes to the copper criteria, DEQ is interested to see how EPA recommends using this type of toxicity data and the different life stages involved which are unique to freshwater mussels in EPA's reassessment of the ammonia criteria. This will allow DEQ to address these issues in a consistent manner for both the ammonia and copper criteria. DEQ will also further investigate the new EPA biotic ligand model copper criteria in regards to this issue. DEQ expects to develop recommendations during the next Triennial Review regarding modification to the copper criteria.

### **Discussion**

**DGIF** Their agency staff would like to see the new copper criteria incorporating freshwater mussel data move forward.

**VAMWA** It seems like there is more of a reason to wait on EPA action regarding copper than for ammonia due to some mussel data appearing to be less sensitive than Ceriodaphnia (which is part of the basis for the current copper criteria).

**DEQ** That does seem to be the case and, if so, EPA's Biotic Ligand Model (BLM) copper criteria might be the appropriate option to pursue.

**USFWS** The current copper criteria would allow concentrations of copper that are higher than copper concentrations that caused toxic effects in toxicity tests with some species of freshwater mussels. This indicates that the current copper criteria may not provide adequate protection to

freshwater mussels. They recommend inclusion of the BLM in VA WQS because the BLM criterion shows better agreement with the toxicity data for freshwater mussels.

**VAMWA** Agreed. The BLM appears to be more reliable than the current hardness based criteria.

### **Presentation**

**Cadmium- DEQ Recommendation:** DEQ recommends proposing revised freshwater criteria for cadmium based on the USGS report titled; “Cadmium Risks to Freshwater Life: Derivation and Validation of Low-Effect Criteria Values Using Laboratory and Field Studies”. This report is the most comprehensive and up-to-date reassessment of the toxicity data available for cadmium and incorporates the data included in the earlier EPA criteria document and the AMSA report. DEQ recommends using the genus mean acute value for the trout genus *Oncorhynchus* (2.02 ug/L at hardness 50) for setting the final acute value, as opposed to the USGS recommendation of using the lowest species mean acute value for cutthroat trout which is an important species in other parts of the country. The resulting criteria is expected to be more stringent than the current Virginia criteria, but not as stringent as the EPA 2001 criteria.

### **Discussion**

**VMA** What would be the new criteria (numerical value)?

**DEQ** Chronic criterion would be about twice the 2001 EPA chronic value and the acute criterion would be very close to EPA’s 2001 value.

**VAMWA** Has the state investigated the probability of whether or not permittees will be able to comply (with the lower criteria)?

**DEQ** Not at this time.....the Department of Planning and Budget does an Economic Impact Analysis during the rulemaking process and the ability to comply and associated cost will be examined at that time.

**VAMWA** Most facilities do not monitor down to the level of the newer criteria. The impact to the Commonwealth may be significant but that is currently unknown.

**DEQ** There may be other states with facilities that test to that low and have that type of information.

### **Presentation**

**Cyanide-DEQ Recommendation for freshwater criteria:** DEQ does not recommend changing the current freshwater criteria for cyanide based on the results of the WERF report because the potential changes to the criteria values are less than  $\pm 8\%$  different from the current criteria values and these are not considered significant enough to warrant changing an established criteria.

### **Discussion**

**DOD** In regard to the freshwater criteria could there possibly be separate criteria for warm water vs. coldwater?

**DEQ** Staff did not feel there is enough of a difference between the sensitivity of salmonid species and other warm-water species (less than 5% in some cases) to conclude that there is a fundamental difference in sensitivity between salmonids and warm-water fishes, which would be necessary to warrant separate criteria. Calculating the criteria based on the entire data set (including the salmonid species) lends confidence that the criteria will be protective of other untested species including threatened and endangered species.

**VAMWA** There is precedent to develop criteria without salmonid data and EPA has recognized life stage presence/absence was an important aspect when developing criteria.

**DEQ** Yes, but currently only with regard to ammonia criteria.

### **Presentation**

**Cyanide-DEQ Recommendation for saltwater criteria:** DEQ does not recommend changing the current saltwater criteria for cyanide based on the results of the WERF report because of the reasons listed below:

- The WERF report proposed acute criterion is five times higher than the current acute criterion.
- The difference was caused primarily by adding new toxicity data for several species of crabs in the genus *Cancer*, mostly for Pacific Ocean crab species.
- All the added toxicity values for these crabs are greater than 12 to 30 times higher than the value for this genus originally established by EPA.
- EPA criteria guidelines call for extra scrutiny when toxicity values within a species or genus are greater than a factor of 10 to determine if some data should not be used in criteria calculations.
- Tests on crabs in the WERF study were conducted at temperatures below ASTM guidelines and EPA's original tests on Atlantic crab. Conducting tests at lower temperatures could result in higher LC<sub>50</sub> values than for tests conducted at higher temperatures, possibly due to effects of temperature on metabolic rates. The disparity in temperatures means the new tests are not exactly comparable to the original EPA tests.
- The Pacific crab species appear to be less sensitive compared to the Atlantic species, raising questions of the appropriate use of these data for Virginia criteria
- The new efforts to recalculate the saltwater cyanide criteria focused exclusively on crabs in the genus *Cancer*, but this is not an important genus in Virginia waters.
- No data are available for the important blue crab or many other species important in Chesapeake Bay or the Atlantic coast. Lack of data for important species limits the level of confidence that a significantly higher criterion for cyanide would provide adequate protection.

### **Discussion**

Whenever toxicity values differ by more than a factor of 10 within the same genus, the EPA guidelines for developing criteria require extra review of the data to determine whether some of the data should not be used for calculating criteria. DEQ noted that the newer LC<sub>50</sub> values for this genus ranged between 12 and 30 times higher than the original EPA values for the crab genus *Cancer*. Although all the newer values for this genus were greater than the factor of 10, WERF report combined all these data into a single genus mean acute value and used that to calculate the criterion. This does not follow EPA criteria guidelines recommendations. DEQ

believes that the disparity in LC<sub>50</sub> values for this genus required more investigation to try to determine if all the data should be considered appropriate for adjusting the Virginia criteria. There was a discussion concerning the applicability of the various crab data. The most obvious differences between the original EPA tests with this crab genus and the subsequent tests were the different species involved and the temperatures at which the tests were conducted. The original EPA tests with the Atlantic rock crab was conducted at 20<sup>0</sup>C; the new tests with this same species were conducted at 15<sup>0</sup>C and the new tests with four different Pacific crab species were conducted at 10<sup>0</sup>C. DEQ was concerned with the difference in temperature because cyanide affects the enzymes involved with cellular respiration and metabolic rate which are affected by temperature. This could be an important factor in influencing acute toxicity and that this could account for less sensitivity (higher LC<sub>50</sub> values) for tests conducted at lower temperatures. If temperature could affect the toxicity of cyanide, this could help explain the greater than a factor of 10 disparity between the LC<sub>50</sub> values for this genus for tests conducted at 20 degrees centigrade compared to the tests at 15 and 10 degrees centigrade. In the Chesapeake Bay, temperatures below 10 and 15 degrees Centigrade occur during the winter, while temperatures greater than 15 and 20 degrees are typical seen in the summer when reproduction is more common. DEQ thought that tests conducted at temperatures below 20 degrees centigrade were less environmentally relevant to the Chesapeake Bay. Because the LC<sub>50</sub> values for this genus differed by greater than a factor of 10 between Atlantic and Pacific species and/or between the different temperatures, DEQ believed that it would be inappropriate to combine all the different LC<sub>50</sub> values for this genus into one genus mean acute value to calculate the acute criterion. If it is inappropriate to combine all these disparate LC<sub>50</sub> values, then DEQ believed that the original tests conducted by EPA at 20 degrees were conducted at the temperature that is most relevant to the Chesapeake Bay and that this would result in a criterion that could be considered protective and appropriate as the basis for the criterion.

VAMWA representatives recognized that the new toxicity tests with crabs were conducted at lower temperatures than the original EPA tests and that temperature could have affected the results, but believed that these lower temperatures were appropriate for the species tested and should all be used to calculate the criteria. VAMWA representatives explained that the new tests with the Atlantic rock crab had not been intended to be a replication of the original EPA tests, but were conducted at a lower temperature because they thought that would be a better test condition for this species. VAMWA thought that newer tests were the better tests and that the original EPA tests should be considered more likely to be outliers.

VAMWA representatives maintained that all the data should be used. VAMWA raised some concern that the original EPA test LC<sub>50</sub> values were based on renewal tests and that the new data were from flow-through exposure tests. They stated that the EPA criteria guidelines would require the deletion of the original EPA data and the acceptance of the newer data in their place because the newer data were from flow-through tests with measured concentrations of cyanide. However, a subsequent check on the original EPA tests with the rock crab showed that the EPA tests had been conducted using a flow-through testing procedure, with measured concentration of cyanide, so the original EPA tests were considered by DEQ to be equal to the newer tests, but had been conducted at a temperature more relevant to the Virginia ecosystem.

**VAMWA** Asked that the state objectively use the EPA guidelines in considering criteria development. VAMWA representatives said that two EPA staff had been involved with the WERF investigation and that this would indicate that EPA would find the WERF report to be valid.

**DEQ** Believed that since the original EPA test values were conducted at a temperature that is environmentally relevant to the Chesapeake Bay and the other tests at lower temperatures showed greater than a factor of 10 difference in LC50 values, there was too much uncertainty involving these data from the various tests to treat them all equally and to recalculate a new acute criterion based on the mean of all the disparate acute values.

### **Presentation**

**Lead-DEQ Recommendation:** DEQ recommends proposing the conversion factor recommended by EPA to the Virginia criteria for lead.

No discussion

### **Presentation**

**Mixing Zones - DEQ Recommendation:** The staff recommends that an across the board prohibition of mixing zones for new and expanding dischargers of PCBs and Mercury not be proposed in the Water Quality Standards regulation at this time. This recommendation is based upon the relatively insignificant contribution of point sources to existing impairments for PCBs and Mercury as well as the unknown consequences on the permitting program due to the current lack of low level PCB and Mercury data.

Staff also recommends that the workgroup formed to address the Board's Antidegradation Policy implementation guidance also consider appropriate permitting guidance for addressing PBT mixing zones and the implementation of the new Methyl Mercury fish tissue criterion.

### **Discussion**

**CBF** Stated concerns the TMDLs developed to address Persistent Bioaccumulative Toxics (PBTs) does not address the larger view of extensive PBT pollution effects. They do agree there is a noticeable lack of data regarding PBTs originating from point sources.

**DEQ** Pointed out that permits discharging to impaired waters must meet WQS at end of pipe.

**CBF** Is test method 1631 used in Virginia (PCBs?)?

**DEQ** Its use is encouraged but the exact extent of its use is unknown.

**CBF** They would like something definitive and positive result from the examination of this issue whether it is Pollution Minimization Plans, improved Best Management Practices etc. They do not want VA to adopt PBT mixing zone bans similar to other states that are difficult to implement or are improperly implemented.

**USFWS** Reminded the group that allowance of mixing zones in general can possibly be construed as the illegal take of aquatic life (i.e. threatened and endangered species). With regard to PBT criteria, human health criteria are may not be as protective of aquatic life.

**DEQ** Staff encourages any member of the Technical Advisory Committee to participate in discussions regarding guidance development for mixing zones, implementation of the new mercury fish tissue criterion, and Antidegradation (tier determination holistically vs. parameter-by-parameter). There will be a follow up email to the group inviting them to help DEQ with these issues.